

ASN (RDA) Chief Systems Engineer

Navy Brief

DoD M&S Steering Committee

DOD M&S Conference

11 March 2008

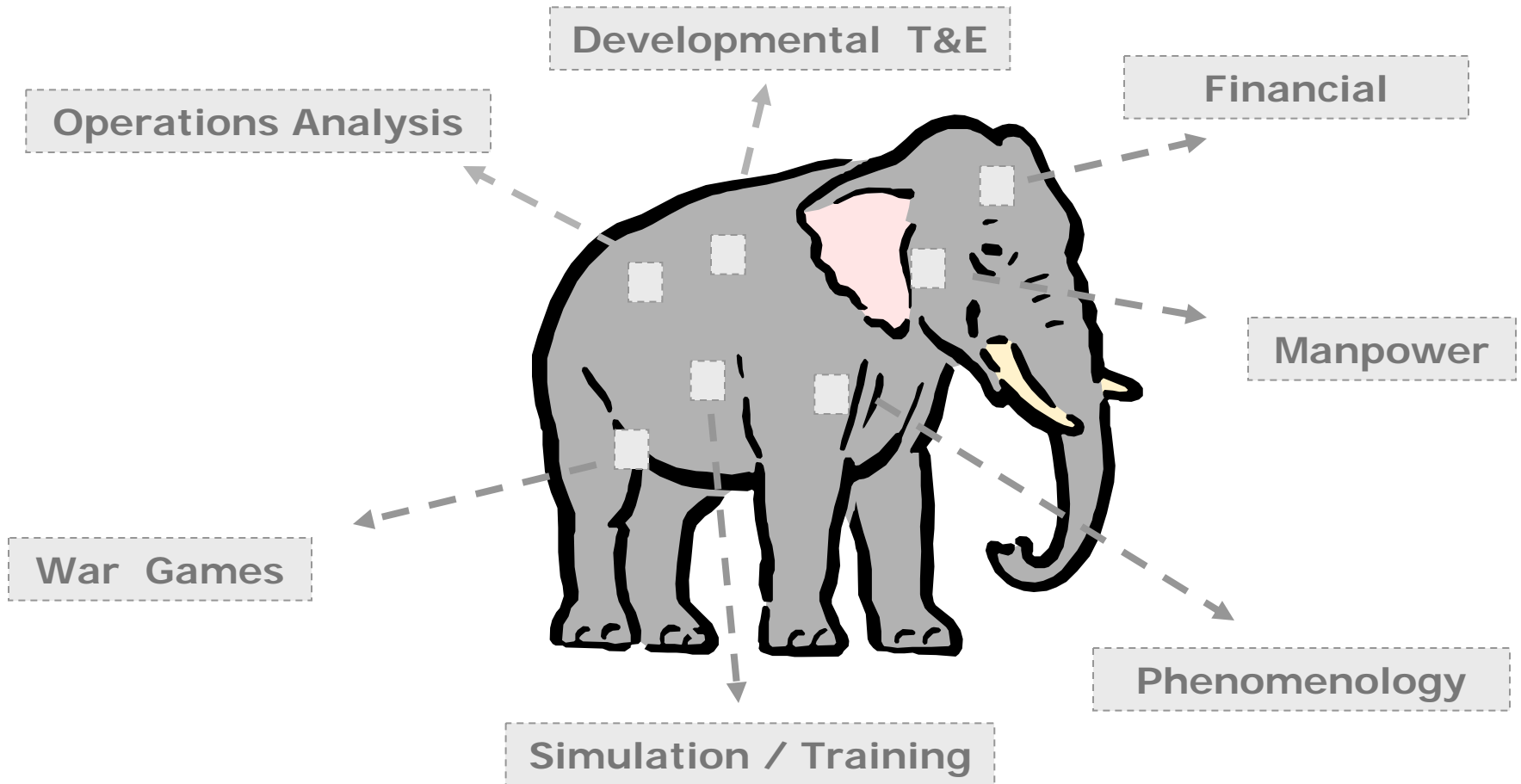
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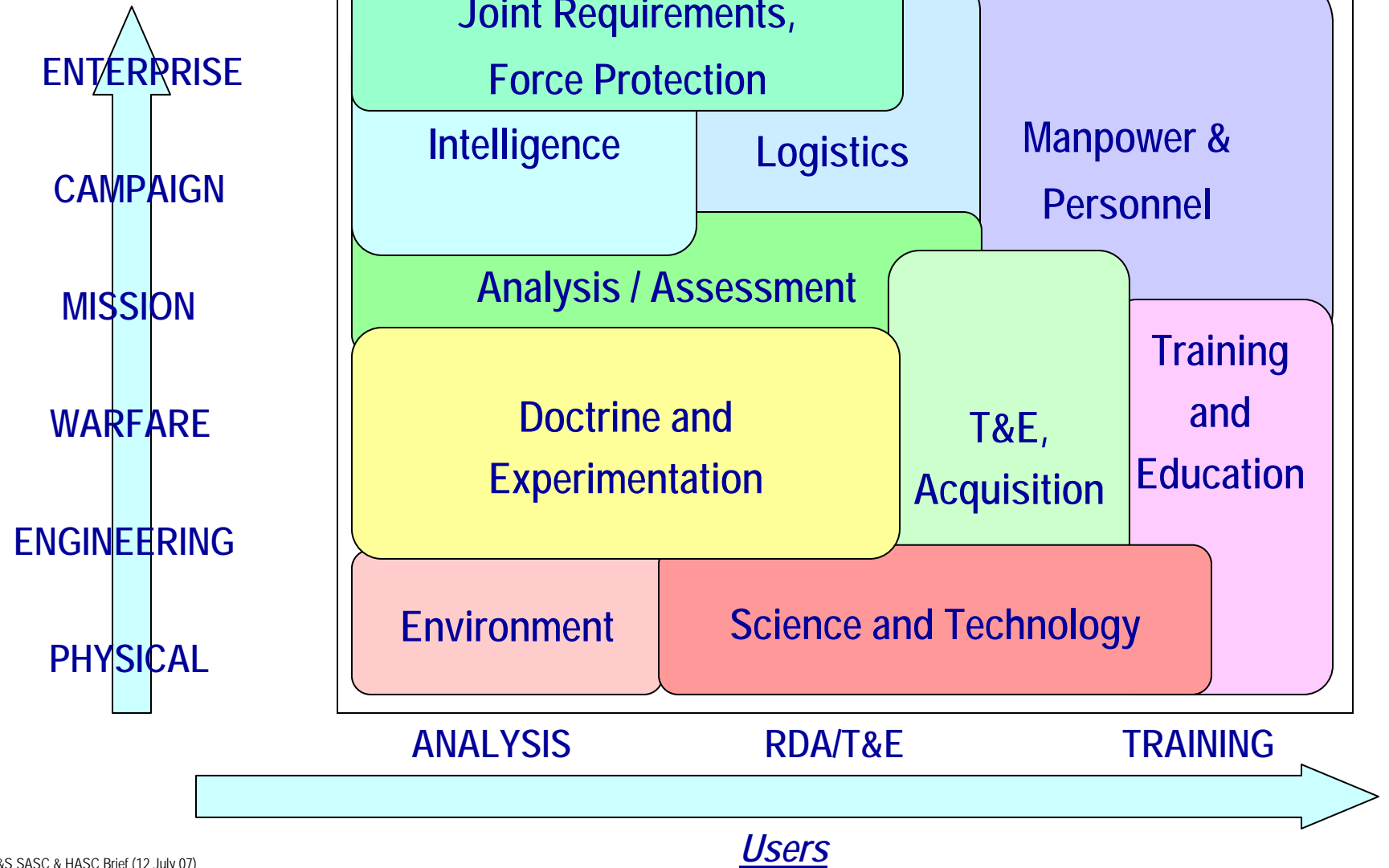
Using M&S is like describing an Elephant

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It Depends on your View

Level of Abstraction



Users



Navy M&S Governance

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M&S Governance Board



Goal Enhance M&S Across, Between & Within the Communities



Navy M&S Governance

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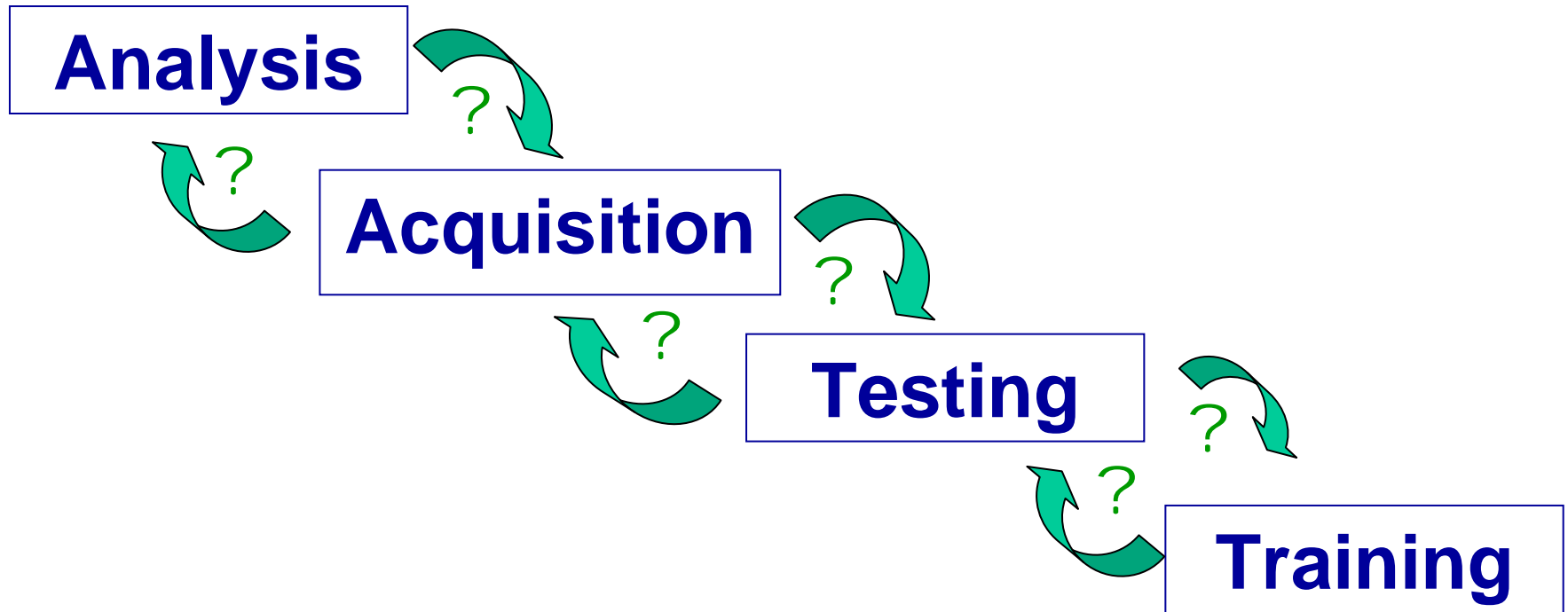
- ◆ **M&S Governance Board Mission:**
 - Promote commonality and interoperability
 - Enhance capabilities Across and Between Communities
 - Coordinate M&S policy and implementation

- ◆ **Community Leads will:**
 - Identify & prioritize M&S needs
 - Support interoperability and reuse
 - Pursue and promote M&S initiatives
 - Implement policy, standards, and guidance
 - Engage at the DoD level on community issues



How Do We Help M&S Between, Across and Between the Communities?

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**Enhance the Interaction to Improve
Delivery of Capabilities to the Warfighter**



Study of Studies Findings

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- ♦ **Examined previous M&S studies, 1994 – Present**
 - Advocate for a Strategic, Longer term commitment to M&S improvements that span all application and warfare areas
- ♦ **Top 3 elements:**
 1. Visibility and Accessibility
 2. Reusability
 3. Simulation Interoperability



Navy Cross-Cutting Efforts

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♦ M&S Tools

- VV&A Documentation Tool – consistent, searchable, and understandable VV&A information
- Standards Vetting Tool – single, repeatable process for all M&S standards
- Collaboration environments for within and across Communities

♦ M&S Data

- M&S Catalog – implementation of the approved M&S Discovery Metadata Specification and XML Schema
- Tr-Service Publish/Subscribe, Search Capabilities

♦ M&S Services

- Navy M&S Information Service (NMSIS) (visibility)
- VV&A Support Team (education, assistance & consistency)
- M&S education for officers and civilians



Example M&S Efforts

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- ♦ Navy Integrated Warfare Systems
- ♦ CVN-21 Virtual Carrier
- ♦ Surface Ship Full Ship Shock Trials (FSST)



Navy Integrated Warfare Systems

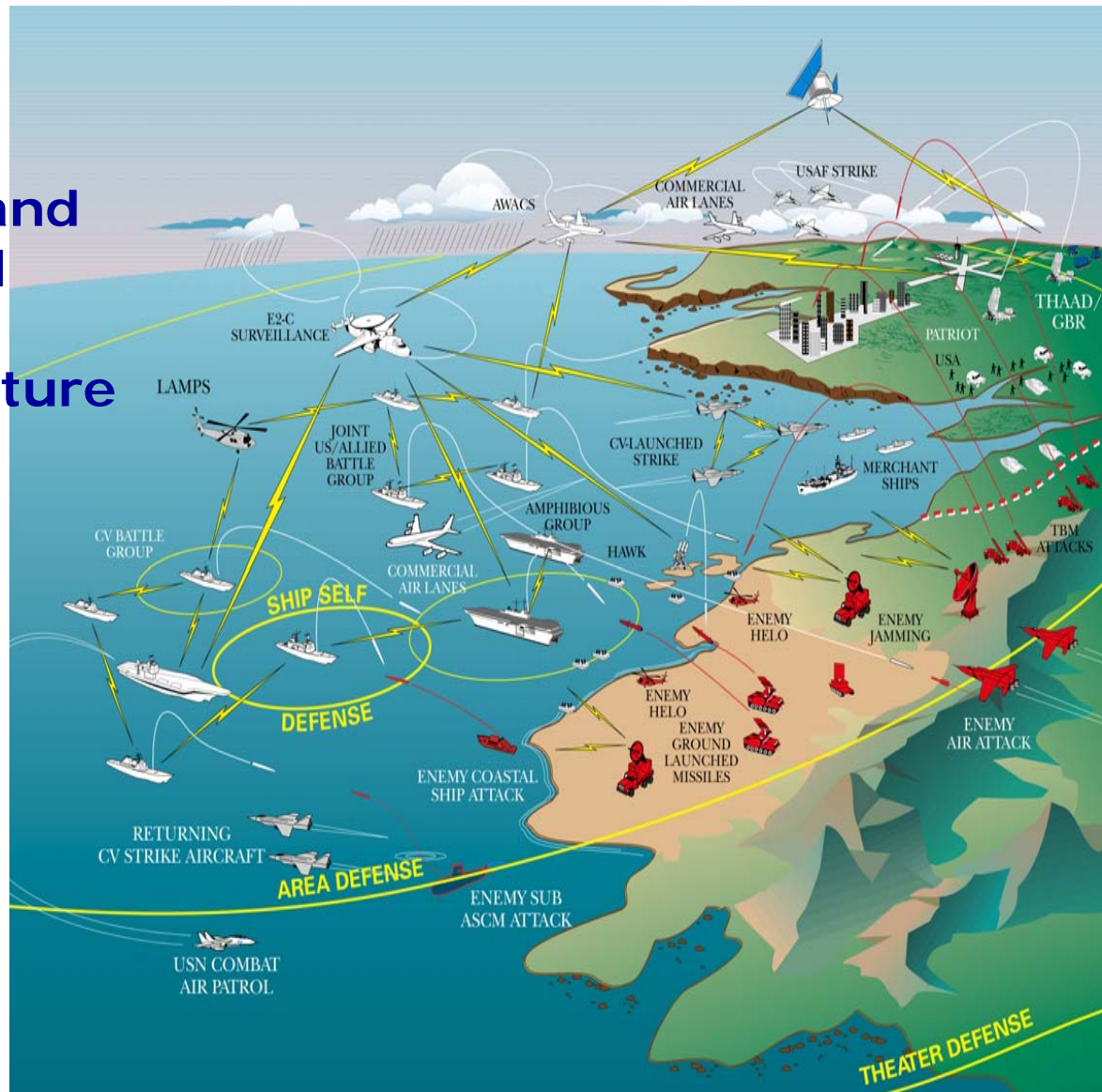
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Challenges

- ◆ Battle Force, Joint, and Coalition Operational Environments
- ◆ Use of Open Architecture
- ◆ Dwindling Resources

Being meet by...

- ◆ Use of Analysis M&S Efficiencies
- ◆ Reduction of Combat System baselines
 - Objective Combat System
- ◆ Enterprise T&E





Navy Integrated Warfare Systems

Enterprise T&E -- A new paradigm for M&S use in T&E

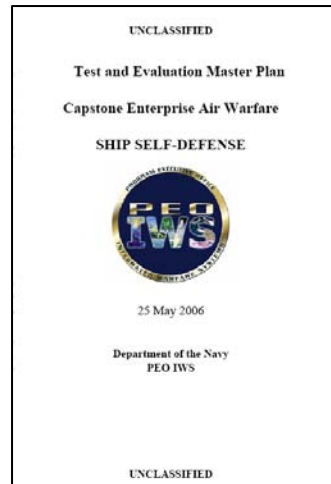
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The purpose of the Capstone Enterprise Air Warfare Ship Self Defense (AW SSD) Enterprise Test and Evaluation Master Plan (TEMP) is to consolidate all AW SSD at-sea testing and P_{RA} Testbed testing

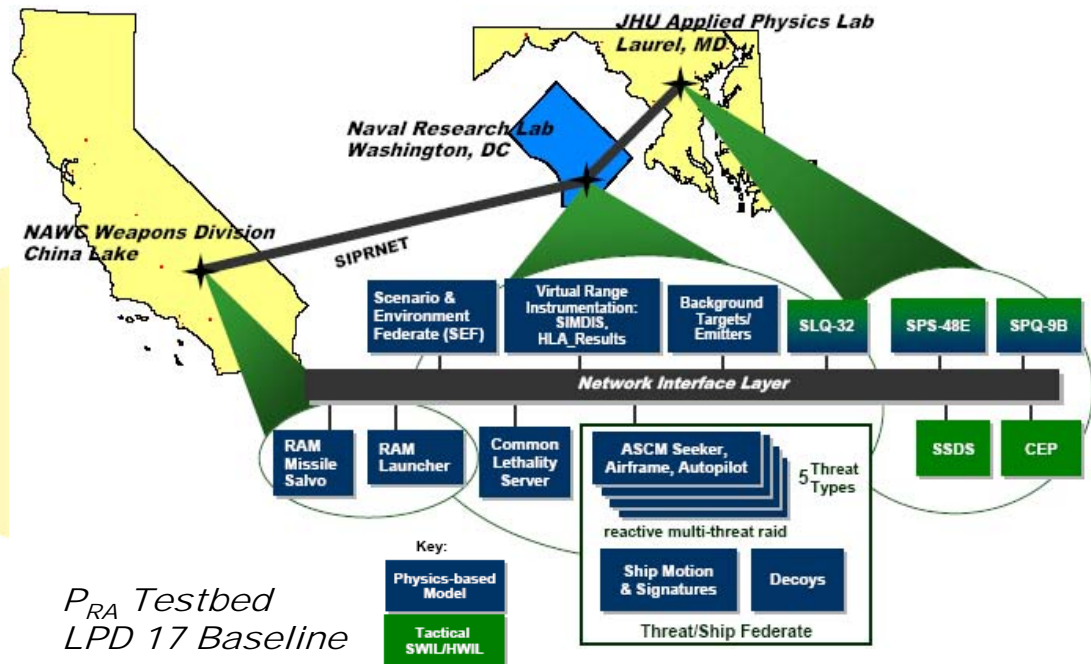
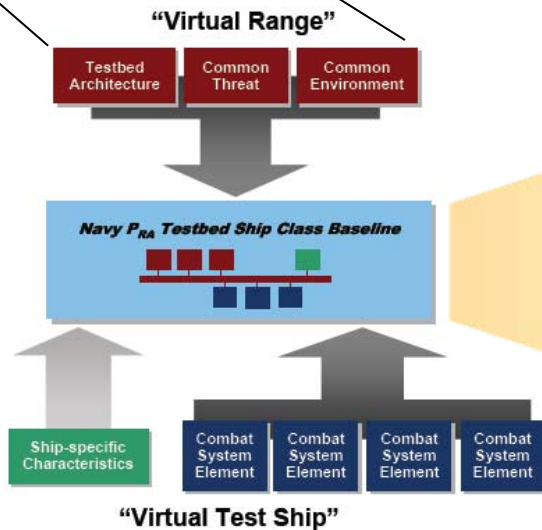
The AW SSD T&E Enterprise Strategy is founded on a two-tiered process to assess AW SSD warfare systems performance:

- 1) Validate models with live testing: Operational Ship testing, Self Defense Test Ship (SDTS) testing
- 2) Assess performance with models

Test Events DT/OT-ET15 thru ET19 are formal P_{RA} Testbed events -- includes DDG 1000, LHA 6, LCS and CVN 21 ship classes



DT/OT-ET15 thru ET19



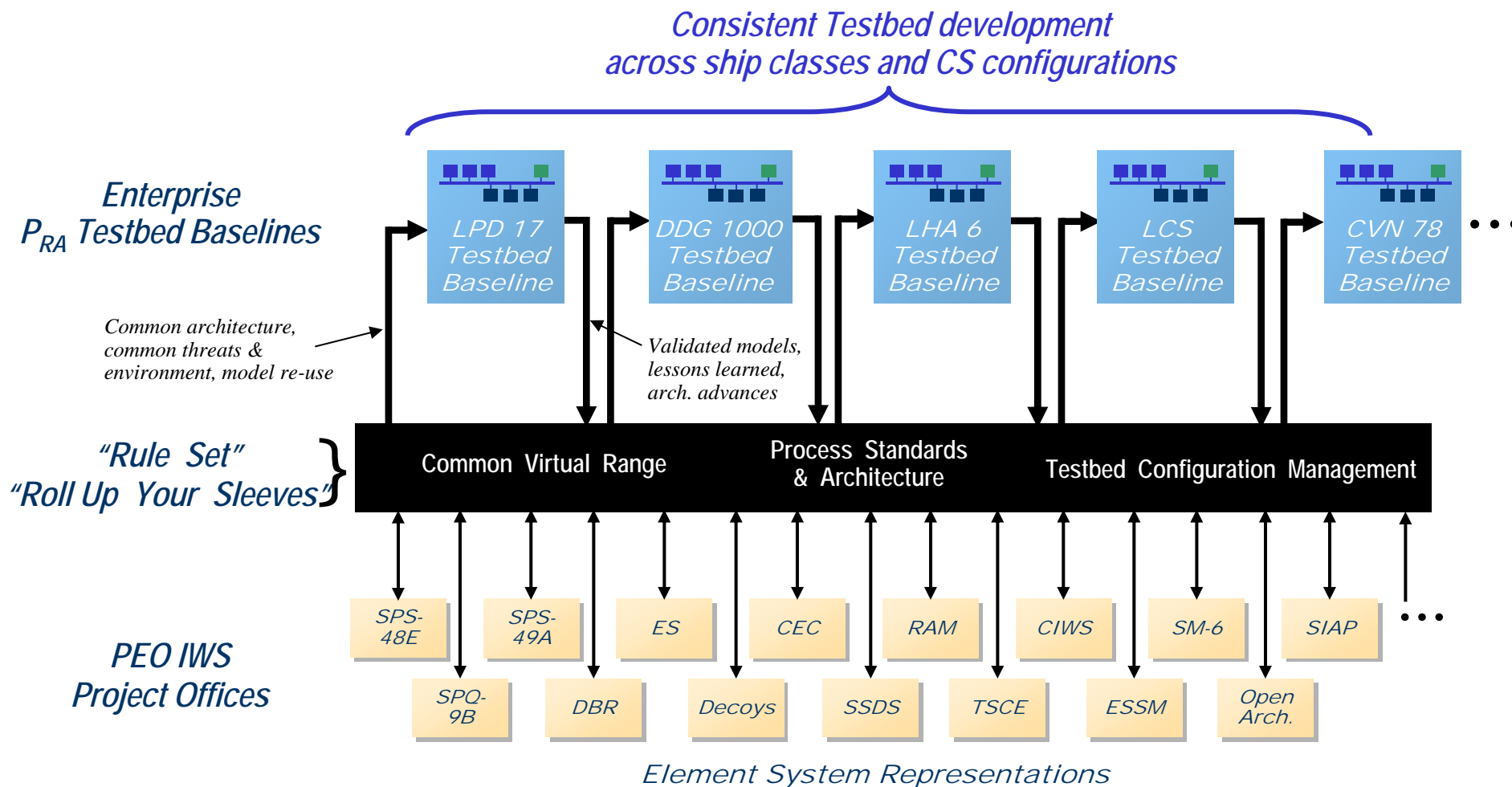
Significant cost avoidance and unprecedented use of M&S for OT&E



Navy Integrated Warfare Systems

Enterprise P_{RA} Testbed Evolution

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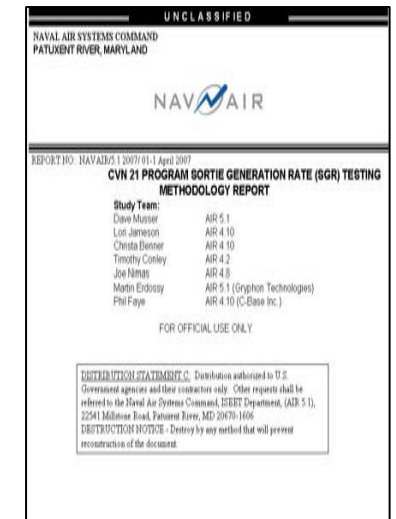


*Significant cost avoidance through
re-use of models, virtual range, & architecture*

PEO Carriers Tasking Letter – 20 Nov 06



SGR T&E Methodology Report – 31 May 07



- ◆ **PEO Carriers directed six month study:**
 - Future Carrier Program Office with COTF, study of methodologies for testing SGR using a virtual carrier M&S environment.
 - *"...an appropriate M&S strategy may bridge the gap between attainable live test opportunities and measuring the full SGR DRM."*
 - Establish *options and cost for mixtures of live test with use of M&S* to support IOT&E for SGR KPP.

- ◆ **Report endorses Virtual Carrier (M&S) use for testing:**
 - A dedicated test of the CVN 21 SGR KPP would require 34 days of operation costing over \$200M O&S
 - Use of M&S allows live test data to be gathered during existing Navy training exercises
 - Live test data validates models which are then used to thoroughly assess the SGR KPP
 - Results meet test requirements with a large cost saving or cost avoidance

SGR – sortie generation rate
COTF – COMOPTEVFOR
KPP – Key Performance Parameter



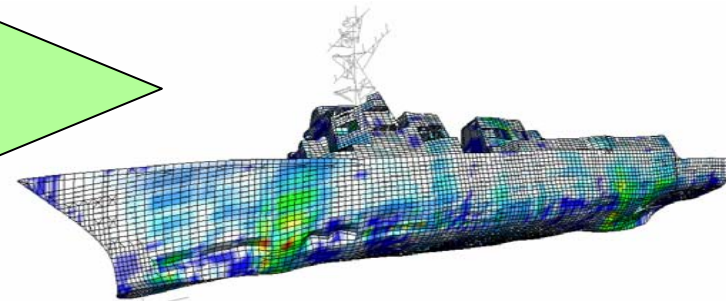
Surface Ship Full Ship Shock Trials (FSST)

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LFT&E Transformation Full Scale Ship Shock Trial

Empirical-based Certification

- Expensive
- Single Point Test
 - Not statistically significant
- Limited Confidence
- Slower Development



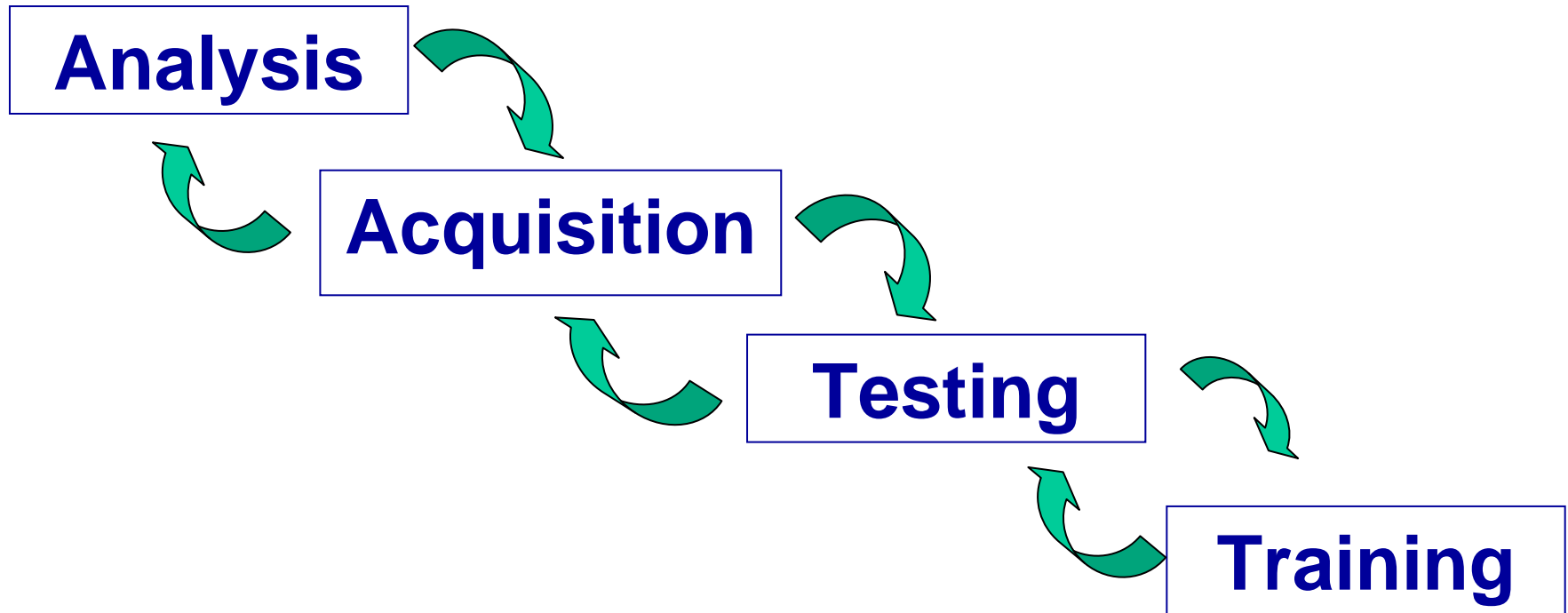
Science-based Certification

- Affordable
- High Fidelity Modeling & Simulation
- Understand Design Space = Confidence
- Faster Development
- Spiral Technology Insertion Enabler



Enhancing the Interaction

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**Transforming M&S to Enable Delivery of
Better Capabilities to the Warfighter**



Summary

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- ♦ **Enhancing M&S is a Complex Challenge**
- ♦ **Working a collaborative management construct with multiple user interests**
- ♦ **Objective continues to be the enhancement of M&S capabilities Across, Between, and Within our Communities to deliver better capabilities to the Warfighter.**